

WHAT IS CLAIMED IS:

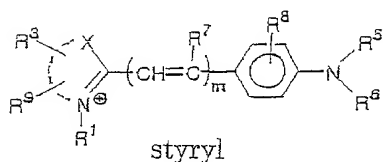
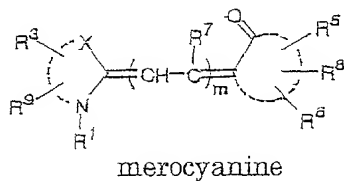
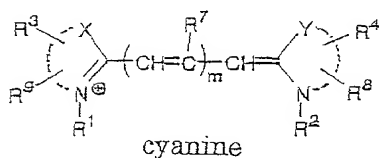
1. A fluorescent nucleotide represented by the formula: A-B-C, wherein A represents a residue of natural or synthetic nucleotide, oligonucleotide, polynucleotide, or derivative thereof, and binds to B at a base moiety in said residue; B represents a divalent linking group or a single bond; and C represents a monovalent group derived from a fluorescent dye having 0 or 1 sulfonic acid group or phosphoric acid group in a molecule.

2. A fluorescent nucleotide represented by the formula: A-B-C, wherein A represents a residue of natural or synthetic nucleotide, oligonucleotide, polynucleotide, or derivative thereof, and binds to B at a base moiety in said residue; B represents a divalent linking group or a single bond; and C represents a monovalent group derived from a fluorescent dye having a water-soluble group other than a sulfonic acid group, a phosphoric acid group, or a carboxylic acid group in a molecule.

3. The fluorescent nucleotide according to claim 1, wherein the fluorescent dye is a cyanine, merocyanine, or styryl fluorescent dye.

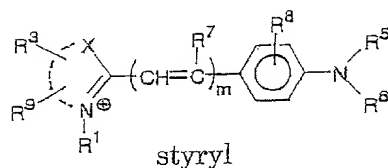
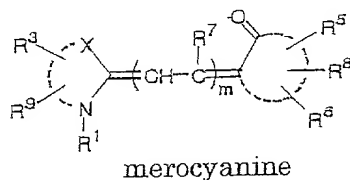
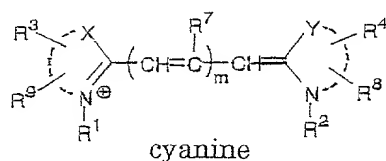
4. The fluorescent nucleotide according to claim 2, wherein the fluorescent dye is a cyanine, merocyanine, or styryl fluorescent dye.

5. The fluorescent nucleotide according to claim 3, wherein the cyanine, merocyanine, or styryl fluorescent dye is a fluorescent dye represented by the following formulae,



wherein X and Y are each independently selected from the group consisting of O, S, and C(CH₃)₂; m is an integer selected from the group consisting of 1, 2, 3 and 4; R¹ and R² each independently represent a hydrogen atom or an alkyl group that may be substituted with a reactive group capable of covalently binding to B, and a oxygen atom or a sulfur atom may be involved in an alkyl chain of the alkyl group, wherein at least one of R¹ and R² represents an alkyl group that may be substituted with a reactive group capable of covalently binding to B; R³ to R⁹ each independently represent a hydrogen atom or a monovalent substituent, and two adjacent groups thereof may bind to form a ring; and the dashed lines represent carbon atoms required to form said cyanine, merocyanine and styryl fluorescent dyes.

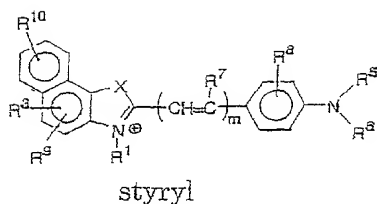
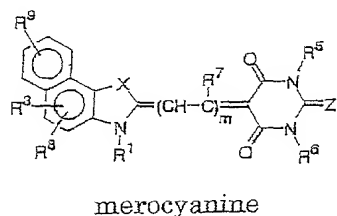
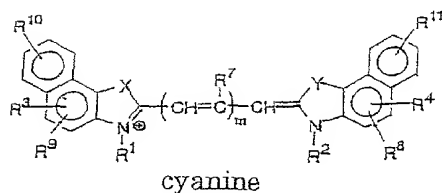
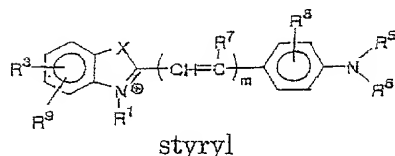
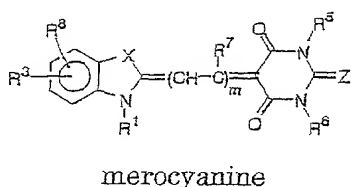
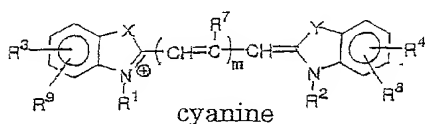
6. The fluorescent nucleotide according to claim 4, wherein the cyanine, merocyanine, or styryl fluorescent dye is a fluorescent dye represented by the following formulae,



wherein X and Y are each independently selected from the group consisting of O, S, and C(CH₃)₂; m is an integer selected from the group consisting of 1, 2, 3 and 4; R¹ and R² each independently represent a hydrogen atom or an alkyl group that may be substituted with a reactive group capable of covalently binding to B, and a oxygen atom or a sulfur atom may be involved in an alkyl chain of the alkyl group, wherein at least one of R¹

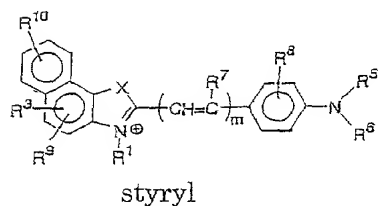
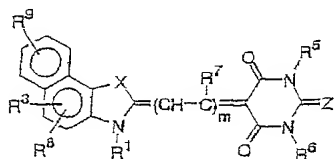
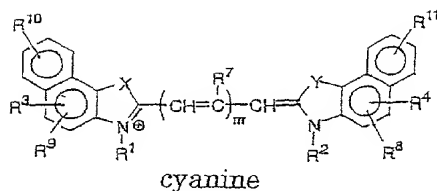
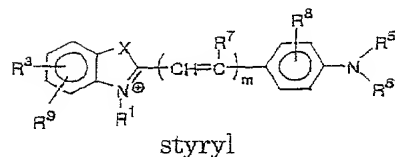
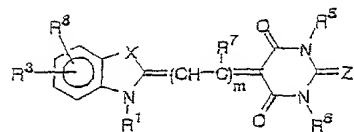
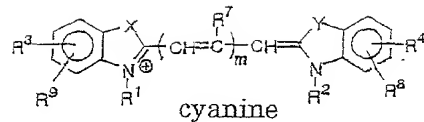
and R^2 represents an alkyl group that may be substituted with a reactive group capable of covalently binding to B; R^3 to R^9 each independently represent a hydrogen atom or a monovalent substituent, and two adjacent groups thereof may bind to form a ring; and the dashed lines represent carbon atoms required to form said cyanine, merocyanine and styryl fluorescent dyes.

7. The fluorescent nucleotide according to claim 3, wherein the cyanine, merocyanine or styryl fluorescent dye is a fluorescent dye having a structure represented by the following formulae,



wherein X and Y are each independently selected from the group consisting of O, S, and $C(CH_3)_2$; Z is selected from the group consisting of O and S; m is an integer selected from the group consisting of 1, 2, 3 and 4; R^1 and R^2 each independently represent a hydrogen atom or an alkyl group that may be substituted with a reactive group capable of covalently binding to B, and an oxygen atom or a sulfur atom may be involved in an alkyl chain of the alkyl group, wherein at least one of R^1 and R^2 represents an alkyl group that may be substituted with a reactive group capable of covalently binding to B; and R^3 to R^{11} each independently represent a hydrogen atom or a monovalent substituent, and two adjacent groups thereof may bind to form a ring.

8. The fluorescent nucleotide according to claim 4, wherein the cyanine, merocyanine or styryl fluorescent dye is a fluorescent dye having a structure represented by following formulae,



wherein X and Y are each independently selected from the group consisting of O, S, and C(CH₃)₂; Z is selected from the group consisting of O and S; m is an integer selected from the group consisting of 1, 2, 3 and 4; R¹ and R² each independently represent a hydrogen atom or an alkyl group that may be substituted with a reactive group capable of covalently binding to B, and an oxygen atom or a sulfur atom may be involved in an alkyl chain of the alkyl group, wherein at least one of R¹ and R² represents an alkyl group that may be substituted with a reactive group capable of covalently binding to B;

and R³ to R¹¹ each independently represent a hydrogen atom or a monovalent substituent, and two adjacent groups thereof may bind to form a ring.

9. The fluorescent nucleotide according to claim 5, wherein at least one of R¹ and R² is an alkyl group substituted with an active ester group capable of covalently binding to an amino group, a hydroxyl group or a thiol group in the group B.

10. The fluorescent nucleotide according to claim 6, wherein at least one of R¹ and R² is an alkyl group substituted with an active ester group capable of covalently binding to an amino group, a hydroxyl group or a thiol group in the group B.

11. The fluorescent nucleotide according to claim 5, wherein at least one of R¹ and R² is an alkyl group substituted with a carboxyl group.

12. The fluorescent nucleotide according to claim 6, wherein at least one of R¹ and R² is an alkyl group substituted with a carboxyl group.

13. The fluorescent nucleotide according to claim 1, wherein A is a residue of nucleotide or derivative thereof.

14. The fluorescent nucleotide according to claim 2, wherein A is a residue of nucleotide or derivative thereof.

15. The fluorescent nucleotide according to claim 1, wherein A represents a residue of natural or synthetic nucleotide or derivative thereof selected from (1) the group consisting of nucleotides consisting of AMP, ADP, ATP, GMP, GDP, GTP, CMP, CDP, CTP, UMP, UDP, UTP, TMP, TDP, TTP, 2-Me-AMP, 2-Me-ADP, 2-Me-ATP, 1-Me-GMP, 1-Me-GDP, 1-Me-GTP, 5-Me-CMP, 5-Me-CDP, 5-Me-CTP, 5-MeO-CMP, 5-MeO-CDP, and 5-MeO-CTP; (2) the group consisting of deoxynucleotides and dideoxynucleotides corresponding to said nucleotides; and (3) the group consisting of derivatives further derived from nucleotides described in said (1) and (2).

16. The fluorescent nucleotide according to claim 2, wherein A represents a residue of natural or synthetic nucleotide or derivative thereof selected from (1) the group consisting of nucleotides consisting of AMP, ADP, ATP, GMP, GDP, GTP, CMP, CDP, CTP, UMP, UDP, UTP, TMP, TDP, TTP, 2-Me-AMP, 2-Me-ADP, 2-Me-ATP, 1-Me-GMP, 1-Me-GDP, 1-Me-GTP, 5-Me-CMP, 5-Me-CDP, 5-Me-CTP, 5-MeO-CMP, 5-MeO-CDP, and 5-MeO-CTP; (2) the group consisting of deoxynucleotides and

dideoxynucleotides corresponding to said nucleotides; and (3) the group consisting of derivatives further derived from nucleotides described in said (1) and (2).

17. The fluorescent nucleotide according to claim 1, wherein B is a linking group consisting of $-\text{CH}_2-$, $-\text{CH}=\text{CH}-$, $-\text{C}\equiv\text{C}-$, $-\text{CO}-$, $-\text{O}-$, $-\text{S}-$, $-\text{NH}-$, or combinations thereof, wherein a hydrogen atom on the linking group may be further substituted with a substituent.

18. The fluorescent nucleotide according to claim 2, wherein B is a linking group consisting of $-\text{CH}_2-$, $-\text{CH}=\text{CH}-$, $-\text{C}\equiv\text{C}-$, $-\text{CO}-$, $-\text{O}-$, $-\text{S}-$, $-\text{NH}-$, or combinations thereof, wherein a hydrogen atom on the linking group may be further substituted with a substituent.

19. The fluorescent nucleotide according to claim 17, wherein B is an aminoalkyl group.

20. The fluorescent nucleotide according to claim 18, wherein B is an aminoalkyl group.

21. A process of preparing fluorescence-labeled nucleic acids which comprises the step of conducting a reaction of the synthesis of nucleic acid by using nucleic acid synthetase, a nucleic acid as a template, and the fluorescent nucleotide according to claim 1.

22. A process of preparing fluorescence-labeled nucleic acids which comprises the step of conducting a reaction of the synthesis of nucleic acid by using nucleic acid synthetase, a nucleic acid as a template, and the fluorescent nucleotide according to claim 2.

23. The method according to claim 21, wherein the reaction of the synthesis of nucleic acid is a reaction selected from the group consisting of a reverse transcription reaction, a terminal transferase reaction, a random prime method, a PCR method, or a nick-translation method.

24. The method according to claim 22, wherein the reaction of the synthesis of nucleic acid is a reaction selected from the group consisting of a reverse transcription reaction, a terminal transferase reaction, a random prime method, a PCR method, or a nick-translation method.

25. A nucleic acid probe or primer which is labeled with the fluorescent nucleotide according to claim 1.

26. A nucleic acid probe or primer which is labeled with the fluorescent nucleotide according to claim 2.

27. A diagnostic agent or a reagent for detecting nucleic acids, which consists of the fluorescent nucleotide according to claim 1.

28. A diagnostic agent or a reagent for detecting nucleic acids, which consists of the fluorescent nucleotide according to claim 2.

29. A kit for detecting nucleic acids comprising (1) the fluorescent nucleotide according to claim 1, (2) a nucleic acid synthetase, and (3) a buffer.

30. A kit for detecting nucleic acids comprising (1) the fluorescent nucleotide according to claim 2, (2) a nucleic acid synthetase, and (3) a buffer.